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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

ART UNIT	PAPER NUMBER
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DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/045,507

Applicant(s)
Macintyre

Examiner
Douglas Wille

Group Art Unit
2814



X Responsive to communication(s) filed on Mar 31, 2000

X This action is **FINAL**.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

X Claim(s) 4, 6, 7, 15, and 17 is/are pending in the application

Of the above, claim(s) _____ is/are withdrawn from consideration.

Claim(s) _____ is/are allowed.

X Claim(s) 4, 6, 7, 15, and 17 is/are rejected.

Claim(s) _____ is/are objected to.

Claims _____ are subject to restriction or election requirement.

Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The drawing(s) filed on _____ is/are objected to by the Examiner.

The proposed drawing correction, filed on _____ is approved disapproved.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All Some* None of the CERTIFIED copies of the priority documents have been received.

received in Application No. (Series Code/Serial Number) _____

received in this national stage application from the International Bureau (PCT Rule 17.2(a))

* Certified copies not received:

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e)

Attachment(s)

Notice of References Cited, PTO-892

Information Disclosure Statement(s), PTO-1449, Paper No(s).

Interview Summary, PTO-413

Notice of Draftsperson's Patent Drawing Review, PTO-948

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 4, 6, 7, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Tsukamoto and Igarashi et al.
3. Lin shows a flip chip device (see Figure 5 and column 5, line 15) with a semiconductor chip 12 attached to an interposer board 22. Lin shows the interposer board attached to a PC board with layer of adhesive 36 but does not show a similar attachment between 12 and 22, noting that while it is standard practice (column 2, line 22) it prevents rework. Note that if rework is not an issue, bonding is recommended. Lin also teaches that the thermal coefficient of expansion of the interposer should match that of the die (column 6, line 28). Lin shows vias 24 in the plate 22 with evaporated traces 26 (column 6, line 64) on the plate which connects contacts 16 to vias 24 and solder beads 32 are formed on the surface of 22. Lin shows that the metallization 26 can be evaporated and if performed after forming the hole it will extend into the holes. In addition a conductive fill is used for the vias (column 6, line 66). Lin does not specify the material of the plate 2 but Tsukamoto shows a similar structure where the plate is a glass ceramic which will

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ceramic plate taught by Tsukamoto to match the TCE of the die and plate and to use the polyimide bond taught by Igarashi et al. to have a known bonding material.

Response to Arguments

4. Applicant's arguments filed 3/31/00 have been fully considered but they are not persuasive.
5. Applicant states that it would take 500 steps to produce the prior art structure but note that the prior art shows a structure which is completed as a unit and the prior art device shows all the features of the claimed device. Thus the 500 step comment is not pertinent to the present discussion.
6. Applicant states that the references, in combination, do not show the claimed invention and that the examiner has not identified a basis for the conclusion of obviousness but if the rejection is reviewed it is seen that all the claimed features are shown by the combination of references and good justification for combining each reference is given.
7. Applicant has provided a number of comments related to examiners function which are not here addressed since they do not bear on the rejection shown above.
8. Applicant has provided comments related to the number of steps that have to be performed on the wafer but attention is drawn to the fact that the claimed device is shown by the prior art. See the above rejection.

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9. Applicant states that none of the structure of the prior art is formed on the semiconductor wafer but note that the only structure in the claimed device that is on the silicon is a contact which is exactly what is shown by the prior art.

Conclusions

10. **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

11. A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.


12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A. Wille whose telephone number is (703) 308-4949.

13. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose number is (703) 308-0956.

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Donald L. Monin, Jr.
Primary Examiner

Olik Chaudhuri
Supervisory Patent Examiner
Art Unit 2814

DAW *luc*

May 4, 2000